

# PATENT ABSTRACTS OF JAPAN

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## (54) COVER TAPE FOR PACKAGING ELECTRONIC PARTS

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain a cover tape that can withstand high-speed operation of a recent surface mounting machine when being peeled off from a carrier tape by a method wherein a base layer is made by laminating together two or more films selected out of films of a polyester, a nylon and polypropylene.

**SOLUTION:** A base layer 2 is a film made by laminating together two or more films selected out of films of a polyester, a nylon and polypropylene, and made up in a thickness of 10-60 $\mu$ m, being transparent and highly excellent in rigidity. An interlayer 3 is a film in thickness of 5-50 $\mu$ m, and is most desirable, in consideration of processability, cushioning capacity when sealed, and cost, to be made of polyethylene resin. A heat sealant layer 4 is in a thickness of 0.5-55 $\mu$ m, and as the method for forming the heat sealant layer, if thickness is 5 $\mu$ m or below, coating of a heat seal lacquer is pref. in consideration of processability. The total thickness of the cover tape is 30-80 $\mu$ m.



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**CLAIMS**

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[Claim(s)]

[Claim 1] It is the covering tape for an electronic-parts package which is a covering tape which can carry out a heat seal to the carrier tape made from plastics, and is characterized by for this covering tape having consisted of a configuration which has an interlayer between a substratum, a heat sealant layer, a substratum, and a heat sealant layer, and a substratum carrying out the laminating of the two or more sorts in the film of polyester, nylon, and polypropylene.

[Claim 2] The covering tape for an electronic-parts package according to claim 1 characterized by for the thickness of 5-50 micrometers and a heat sealant layer consisting [ the thickness of said substratum / the thickness of 10-60 micrometers and an interlayer ] of 0.5-55 micrometers, and the total thickness consisting of 30-80 micrometers.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention protects electronic parts from contamination, on the occasion of storage of electronic parts, transportation, and wearing, since it mounts in an electronic-circuitry substrate, it is aligned, and it relates to the covering tape by which a heat seal may be carried out to the carrier tape made from plastics which formed the receipt pocket among the package objects which have the function which can be taken out.

[0002]

[Description of the Prior Art] According to the configuration of electronic parts, the case of electronic parts [ , such as transistors including IC, diode, a capacitor, and a piezoelectric-device register, ] for surface mounts which is packed by the package object which consists of a covering tape which can carry out the heat seal of the pocket which can be contained, and by which embossing shaping was carried out to the carrier tape made from plastics formed continuously and a carrier tape, and is supplied to it is increasing. After the electronic parts of contents exfoliate the covering tape of a package object, they are taken out automatically and the surface mount is carried out to the electronic-circuitry substrate.

[0003] In recent years, it is extended with vigor with the need of the electronic parts mentioned above remarkable for remarkable development of the electric product which makes a computer the start. In connection with it, the demand of the improvement in the speed of a surface mount machine which mounts these electronic parts in an electronic-circuitry substrate increased, and a current surface mount speed has resulted even in 0.09 second / baton (cycle until it begins mounting of one electronic parts and begins mounting of the following electronic parts). Since a covering tape exfoliates at the same speed or the speed beyond it in that case, a big load is applied to the covering tape itself, a tape piece happens, and it has become the cause of dropping productive efficiency.

[0004]

[Problem(s) to be Solved by the Invention] In case a covering tape exfoliates from a carrier tape, the covering tape which can be equal to improvement in the speed of a surface mount machine in recent years is obtained.

[0005]

[Means for Solving the Problem] This invention is the covering tape which can carry out a heat seal to the carrier tape made from plastics which formed continuously the pocket which contains electronic parts, and this covering tape is a covering tape for an electronic-parts package on which it consisted of a configuration which has an interlayer between a substratum, a heat sealant layer, a substratum, and a heat sealant layer, and the substratum carried out the laminating of the two or more sorts in the film of polyester, nylon, and polypropylene. Furthermore, a desirable mode is a covering tape for an electronic-parts package whose interlayer the thickness of the substratum which is an outer layer is 10-60 micrometers, and is 5-50 micrometers, whose heat sealant layer is 0.5-55 micrometers and whose total thickness is 30-80 micrometers.

[0006]

[Embodiment of the Invention] When drawing 1 explains the component of the covering tape 1 of this invention, a substratum 2 is the film which carried out the laminating of the two or more sorts in the film of polyester, nylon, and polypropylene, and it is a rigid high film in the transparence whose thickness is 10-60 micrometers. As polyester, 6-nylon, 6, and 6-nylon etc. is mentioned, for example as nylon, such as polyethylene terephthalate and polybutylene terephthalate, for example. Furthermore, it is still more desirable when biaxial extension of this film is carried out. If the thickness of rigidity of a substratum is lost

by 10 micrometers or less, a covering tape becomes easy to go out and 60 micrometers is exceeded, it will be too hard and a seal will become unstable.

[0007] Thickness is the film which is 5-50 micrometers, and when workability, the cushioning properties at the time of a seal, cost, etc. are taken into consideration, as for an interlayer 3, it is most desirable to use polyethylene system resin. as polyethylene system resin -- low density polyethylene and a line -- a thing, an ethylene-glycidyl methacrylate copolymer, etc. containing a metal are mentioned to low density polyethylene, an ethylene-vinylacetate copolymer, an ethylene-alkyl methacrylate copolymer, an ethylene-alkyl acrylate copolymer, an ethylene-methacrylic-acid copolymer, an ethylene-acrylic-acid copolymer, an ethylene-methacrylic-acid copolymer, or an ethylene-acrylic-acid copolymer.

[0008] If the middle class's thickness is set to 5 micrometers or less by the extrusion laminating method, the variation in thickness will be large and suitable PIRUOFU reinforcement will no longer be obtained at the time of a seal. By 50 micrometers or more, by the extrusion laminating method, processing is difficult, must stop having to produce an interlayer at another process, and is connected to a cost rise. Both may be laminated through the glue line of heat-curing molds, such as an isocyanate system and an imine system, in order to raise the lamination reinforcement of an outer layer and an interlayer.

[0009] Thickness is 0.5-55 micrometers, and when workability is considered by 5 micrometers or less as the heat sealant stratification approach, as for the heat sealant layer 4, it is desirable to coat heat-sealing lacquer. Moreover, it is desirable to use the extrusion laminating method from the point of workability as it is 5 micrometers or more. All the resin used for the interlayer who mentioned above as an ingredient of a heat sealant layer, thermoplastic elastomer, polyester system adhesives, etc. are mentioned. As thermoplastic elastomer, a styrene-butadiene copolymer or its hydrogenation object, a styrene-isoprene copolymer, or its hydrogenation object is mentioned.

[0010] When the thickness of a heat sealant layer makes it 0.5 micrometers or less, the variation in thickness becomes large and PIRUOFU reinforcement varies. Like an interlayer's case, by the extrusion laminating method, processing is difficult, must stop having to produce this layer at another process, and is connected to a cost rise by 55 micrometers or more. Moreover, in order to prepare an electrostatic effect, an antistatic treatment layer or a conductive layer may be prepared in the front rear face by the side of a substratum.

[0011] The total thickness of a covering tape is 30-80 micrometers, and if a tape piece trouble arises and it is set to 80 micrometers or more when were set to 30 micrometers or less and high-speed exfoliation is carried out with a surface mount machine, the variation in PIRUOFU reinforcement will become large at the time of exfoliation.

[0012]

[Example] Although the example of this invention is shown below, this invention is not limited at all by these examples. The laminated film of a configuration of having indicated as a substratum for examples 1-6 and the examples 1-6 of a comparison was produced by the dry laminate method, the interlayer was produced by the extrusion laminating method to it, in the case of thickness 5 micrometers or less, the heat sealant layer was produced with the GURABYUA coating method, in the case of thickness 5 micrometers or more, the film was produced by the extrusion laminating method, and it obtained the covering tape of lamination shown in drawing 1 . The obtained covering tape was heat sealed after the slit to 5.3mm width of face with the carrier tape made from PET of 8mm width of face and 100m length, the peel test by PIRUOFU reinforcement and the surface mount machine was measured, the example was shown in Table 1 and the characterization result was shown in Table 2 about the example of a comparison.

[0013]

[Table 1]

		実施例 1	実施例 2	実施例 3	実施例 4	実施例 5	実施例 6
基層	第 1 層	PET / 9	PET / 12	PET / 25	PP / 6	PET / 9	PET / 16
	第 2 層	PET / 25	Ny / 12	PP / 25	Ny / 6	PP / 9	Ny / 12
	第 3 層	—	—	—	—	Ny / 9	PP / 25
中間層		PE / 20	LL / 15	EMMA / 15	EVA / 40	EEA / 30	EMAA / 6
ヒートシーラント層		EVA / 10	変PE / 10	PET / 1	PP / 2	塩酢ビ / 1	ION / 10
ヒート強度 初期値g/1mm巾		48	51	62	45	30	54
高速剥離テスト		○	○	○	○	○	○

[0014]

[Table 2]

		比較例 1	比較例 2	比較例 3	比較例 4	比較例 5	比較例 6
基層	第 1 層	PET / 25	Ny / 25	PP / 25	PET / 9	Ny / 9	PP / 9
	第 2 層	PET / 25	Ny / 12	PP / 25	PET / 9	Ny / 9	PP / 9
中間層		PE / 30	LL / 15	EMMA / 20	EVA / 40	EEA / 30	EMAA / 6
ヒートシーラント層		EVA / 20	変PE / 10	PET / 1	PP / 2	塩酢ビ / 1	ION / 10
ヒート強度 初期値g/1mm巾		58	60	73	45	51	61
高速剥離テスト		×	×	×	×	×	×

[0015] \* result [ of a high-speed peel test ]: -- 160 degrees \* heat-sealing condition [ to which x; tape went out ]: C/1kg/cm<sup>2</sup> /, and O; tape piece \*\*\*\*\* and 0.1sec. Peel speed [ ] -- the figure of a publication on the right of the material of each class in 180-degree Peel and Peel speed 0.07 second /, and baton \* table .n=3 high-speed exfoliation Condition : shows thickness 300 mm/min. Shilu width of face 0.4mmx2 Peel conditions : 180-degree Peel The figure of a (unit mum) \* heat sealant layer shows the weight ratio of a class component to the thermoplastics 100 weight section.

\* PET = Polyethylene terephthalate Ny = Nylon PP = Polypropylene PE = Polyethylene LL = a line -- polyethylene EMMA = The ethylene-methyl methacrylate copolymer EVA = An ethylene-vinylacetate copolymer EEA = The ethylene-ethyl acrylate copolymer EMMA = ethylene-methyl acrylate copolymer strange PE = blend object acrylic of polyethylene / polystyrene / thermoplastic elastomer = methyl methacrylate-butyl methacrylate polymer.

Salt vinyl acetate = vinyl chloride vinyl acetate copolymer ION Complex of =EMAA and zinc [0016]

[Effect of the Invention] Even if it exfoliates the covering tape of this invention from a carrier tape using a high-speed surface mount machine, tape cutting accident does not occur, but the surface mount of electronic

parts is made, without dropping productive efficiency.

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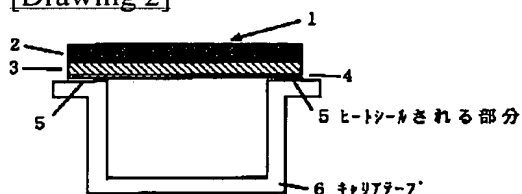
DRAWINGS

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[Drawing 1]



[Drawing 2]



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